We CLAIM:

1. A process for preparation of a self dispersing, synergistic poly (urethane-co-acrylics) copolymer useful as coating material, said process comprises the steps of:
    a. treating a polyol, having molecular weight in the range of 500 – 3000, having general formula $(OH\text{-}R\text{-}OH)_n$, where R represents an alkyl group and n is any integer between 4 and 10, with 150-200 mole % of isocyanate of (cyclo) aliphatic or aromatic type at a temperature in the range of 40-150°C under nitrogen atmosphere, for a period of minimum 2 hours to obtain isocyanate terminated pre-polymer;
    b. adding 50-100 mole % diol isocyanate, having essentially tetraphenylethane and 0.1-0.3 mol % of catalyst to the isocyanate terminated pre-polymer, in organic solvent, under agitation at a temperature not exceeding 40°C for a period in the range of 15-30 hrs to obtain iniferter incorporated polyurethane;
    c. treating 25-400%w/w of acrylic monomer, characterized essentially by vinyl monomers containing carboxyl groups or sulfonic acid groups, with iniferter incorporated polyurethane for minimum 12 hrs at a temperature in the range of 50-80°C to obtain urethane-co-acrylic polymer;
    d. adding 0.01- 0.1 mole % of base to urethane-co-acrylic polymer, as formed in step (iii), under agitation at a temperature in the range of 30-80°C for a period of minimum 1 hr to obtain slurry, and
    e. dispersing the slurry in 150-200% v/v of water to obtain the poly (urethane-co-acrylic) copolymer dispersion.
2. A process as claimed in Claim 1, wherein the polyol used is selected from a group comprising, Polyethylene glycol, polypropylene glycol, polyoxypropylene glycol, poly (tetramethylene oxide) glycol, and polycaprolactone diol.
3. A process as claimed in Claim 1, wherein isocyanates used is selected from a group comprising, hexamethylene diisocyanate, isophorone diisocyanate, p-phenylene diisocyanate, toluene diisocyanate, and diphenylmethane diisocyanate.
4. A process as claimed in Claim 1, wherein the organic solvent used is selected from a group comprising, dimethyl sulphoxide, dimethyl formamide, dimethyl acetamide, acetone, butan-2-one, carbon tetrachloride, and n-methyl pyrrolidone.

5. A process as claimed in Claim 1, wherein the catalyst used is selected from a group comprising of triethylene diamine, piperazine, dibutyl tin dilaurate, stannous octoate, dioctyl tin dilaurate and diaza bicyclo octane.

6. A process as claimed in Claim 1, wherein the iniferter used is selected from tetraphenylethane diol and dithio carbamate.

7. A process as claimed in Claim 1, wherein the acrylic monomer used is selected from a group comprising, acrylic acid, methacrylic acid, methylene succinic acid and 4-styrene sulfonic acid.

8. A process as claimed in Claim 1, wherein the base used is selected from primary, secondary, tertiary amines, and/or alkali metal hydroxides like triethyl amine, trimethyl amine, triisopropyl amine, N,N'-dimethyl aniline, N,N'-diethanol amine, NaOH and KOH, either individually or in combination.

9. A process as claimed in claim 1, wherein the said synergistic polyurethane-polyvinyl polymer has cold crack resistance upto -15°C.

10. A process as claimed in claim 1, wherein the said synergistic polyurethane-polyvinyl polymer has film adhesion strength about 7.2 N/cm .

11. A process as claimed in claim 1, wherein the said synergistic polyurethane-polyvinyl polymer has rub fastness upto 4 dry.

12. A self dispersing water based synergistic polyurethane-polyvinyl block copolymer useful as coating material.

13. A polyurethane-polyvinyl block copolymer as claimed in claim 12, wherein the said polymer has cold crack resistance upto -15°C.

14. A polyurethane-polyvinyl block copolymer as claimed in claim 12, wherein the said polymer has film adhesion strength about 7.2 N/cm .

15. A polyurethane-polyvinyl block copolymer as claimed in claim 1, wherein the said polymer has rub fastness upto 4 dry.